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Large language model use in dental education: a cross-sectional multi-country study

By

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Abstract

Background Large language models (LLMs) are increasingly used in higher education, but multi-country evidence on dental students' use, verification, and integrity practices is limited. **Objective** To compare senior dental students' LLM use, perceived time and academic impact, reliability judgements, verification practices, and integrity safeguards across five countries. **Methods** An anonymous cross-sectional online survey was administered to final-year dental students in the United Arab Emirates (UAE), Jordan, Malaysia, Oman, and Brazil. Measures included tools used, frequency and motivations, learning activities, perceived time and academic impact, verification frequency and strategies, guideline awareness, and integrity safeguards. Analyses used Kruskal-Wallis and chi-square tests with Benjamini-Hochberg adjustment, effect sizes, Spearman correlations, and ordinal logistic models. **Results** In total, 454 students participated (UAE 160, Jordan 101, Malaysia 75, Oman 62, Brazil 56; mean age 22.9; 74.9% female). ChatGPT predominated (95.9%), followed by Gemini, formerly Bard (18.0%), DeepSeek (16.4%), and Claude (7.4%). Tool diversity varied across country-based cohorts, with Oman showing greater multi-tool uptake. Use was frequent (several times/week 39.2%, daily 28.6%). Key motivations were saving time (73.0%), clarifying concepts (56.9%), and summarising (54.1%). Common activities included understanding complex concepts (75.3%), summarising lecture notes (70.0%), exam preparation (61.5%), and assignment research (53.2%); exam-time assistance was reported by 25.6%. Verification was 'always' 20.0% and 'often' 34.1%, varying across country-based cohorts, with Oman verifying less frequently than other cohorts. Guideline awareness was 40.3% overall (UAE 61.3% vs Brazil 8.3%). Integrity safeguards commonly involved paraphrasing (69.6%), citations (39.2%), and plagiarism checks (38.0%); disclaimers were uncommon (9.2%). LLM-use frequency correlated with broader academic use ($\rho = 0.289$) but not with integrity concern ($OR = 0.963$). **Conclusions** LLM use is widespread and heterogeneous across settings, including non-trivial higher-stakes use. Dental programmes should implement explicit training in verification, evidence traceability, and disclosure, supported by clear, enforceable guidance and assessment designs aligned with real-world LLM practices.

Keywords

Author Keywords: [Academic Integrity](#); [Artificial Intelligence](#); [ChatGPT](#); [dental education](#); [large language models](#)

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Data availability statement

The datasets generated or analysed during this study are available from the corresponding author on reasonable request.

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No potential conflict of interest was reported by the author(s).

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